

WILTON[®]

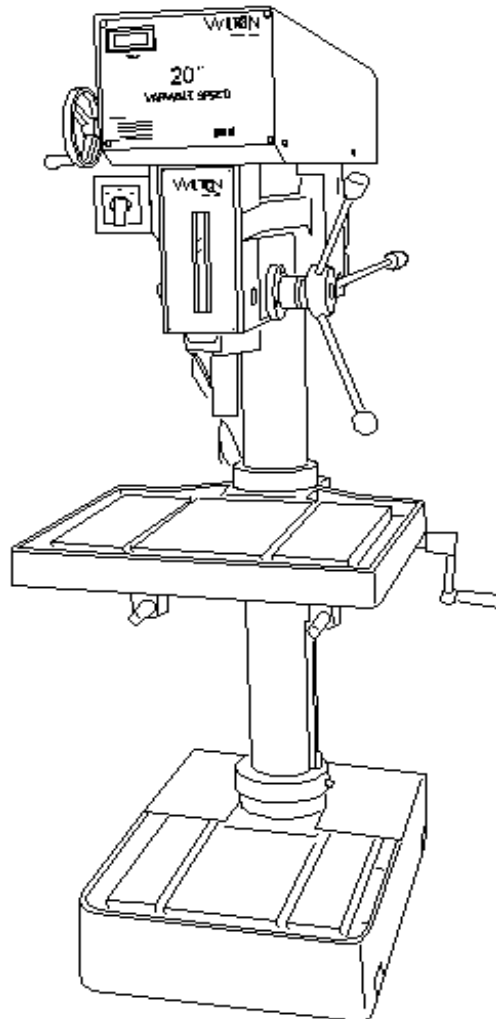
WMH TOOL GROUP

Operating Instructions — Parts Manual

20-Inch VS Drill Press

Models: 2221VS, 2223VS, 2232AC, 2234AC

Serial Number 201001 and greater



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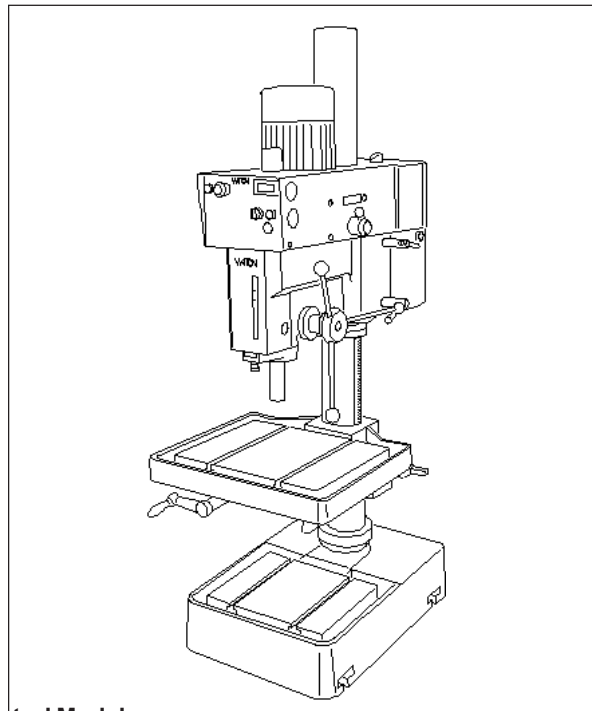
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General Specifications

The Wilton 20 Inch Variable Speed Drill presses Models 2221VS, 2223VS, 2232AC, and 2234AC are available in manual speed control or inverter speed control configuration. Electrical power options are single-phase, 115 and 220 volts, or 3-phase, 440 volts.

Specifications



| | <u>Manual Speed Control Models</u> | | <u>Inverter Speed Control Models</u> | |
|--------------------------------|------------------------------------|-------------------------|--------------------------------------|-----------------------|
| | 2221VS | 2223VS | 2232AC | 2234AC |
| Drilling Capacity | | | | |
| Cast Iron | 1-1/4 In. | 1-1/4 In. | 1-1/2 In. | 1-1/2 In. |
| Steel | 1 In. | 1 In. | 1-3/8 In. | 1-3/8 In. |
| Spindle to Table (Max.) | 32-3/8 In. | 32-3/8 In. | 32-3/8 In. | 32-3/8 In. |
| Spindle to Base (Max.) | 44-1/2 In. | 44-1/2 In. | 44-1/2 In. | 44-1/2 In. |
| Spindle to Column (Max.) | 10-7/16 In. | 10-7/16 In. | 10-7/16 In. | 10-7/16 In. |
| Motor | | | | |
| Rating | 2 hp, 1-Phase | 2 hp, 3-Phase | 2 hp, 3-Phase | 2 hp, 3-Phase |
| Voltage | 115/220 V | 220/440V | 220V | 440V |
| Pre-wired Voltage | 115 V | 220V | 220V | 440V |
| T-Slots (Table/Base) | | | | |
| Number | 2 | 2 | 2 | 2 |
| Size | 5/8 In. | 5/8 In. | 5/8 In. | 5/8 In. |
| Column Diameter | 4-1/2 In. | 4-1/2 In. | 4-1/2 In. | 4-1/2 In. |
| Spindle | | | | |
| Travel | 6 In. | 6 In. | 6 In. | 6 In. |
| Taper | MT-3 | MT-3 | MT-3 | MT-3 |
| RPM (Variable) | 300-2000 | 300-2000 | 65-2000 | 65-2000 |
| Quill | | | | |
| Diameter | 3 In. | 3 In. | 3 In. | 3 In. |
| Travel | 6 in. | 6 in. | 6 in. | 6 in. |
| Table | | | | |
| Overall | 22x18-3/4 In. | 22x18-3/4 In. | 22x18-3/4 In. | 22x18-3/4 In. |
| Working Surface | 18-1/8x14-3/4 | 18-1/8x14-3/4 | 18-1/8x14-3/4 | 18-1/8x14-3/4 |
| Travel | 32-3/8 In. | 32-3/8 In. | 32-3/8 In. | 32-3/8 In. |
| Base | | | | |
| Overall | 26x19 In. | 26x19 In. | 26x19 In. | 26x19 In. |
| Working Surface | 15-1/4x12-1/16 | 15-1/4x12-1/16 | 15-1/4x12-1/16 | 15-1/4x12-1/16 |
| Overall Dimensions | | | | |
| Length | 34-1/4 In. | 34-1/4 In. | 36-5/8 In. | 36-5/8 In. |
| Width | 27 In. | 27 In. | 27 In. | 27 In. |
| Height | 77-1/4 In. | 77-1/4 In. | 82-1/4 In. | 82-1/4 In. |
| Weight | | | | |
| Net | 715 lbs.(325 kgs) ... | 715 lbs.(325 kgs) | 715 lbs.(325 kgs) ... | 715 lbs.(325 kgs) ... |
| Gross | 803 lbs.(365 kgs) ... | 803 lbs.(365 kgs) | 792 lbs.(360 kgs) ... | 792 lbs.(360 kgs) ... |

1. All work shall be secured using either clamps or a vise to the drill press table. It is unsafe to use your hands to hold any workpiece being drilled.



WARNING

- Misuse of this machine can cause serious injury.
- For safety, machine must be set up, used and serviced properly.
- Read, understand and follow instructions in the Operating Instructions and Parts Manual which was shipped with your machine.

When setting up machine:

- Always avoid using machine in damp or poorly lighted work areas.
- Always be sure the machine support is securely anchored to the floor or the work bench.

When using machine:

- Always wear safety glasses with side shields (See ANSI Z87.1)
- Never wear loose clothing or jewelry.
- Never overreach—you may slip and fall.

When servicing machine:

- Always disconnect the machine from its electrical

supply while servicing.

- Always follow instructions in Operating Instructions and Parts Manual when changing accessory tools or parts.
- Never modify the machine without consulting Wilton Corporation.

You—the stationary power tool user—hold the key to safety.

Read and follow these simple rules for best results and full benefits from your machine. Used properly, Wilton's machinery is among the best in design and safety. However, any machine used improperly can be rendered inefficient and unsafe. It is absolutely mandatory that those who use our products be properly trained in how to use them correctly. They should read and understand the Operating Instructions and Parts Manual as well as all labels affixed to the machine. Failure in following all of these warnings can cause serious injuries.

Machinery general safety warnings

1. Always wear protective eye wear when operating machinery. Eye wear shall be impact resistant, protective safety glasses with side shields which comply with ANSI Z87.1 specifications. Use of eye wear which does not comply with ANSI Z87.1 specifications could result in severe injury from breakage of eye protection.
2. Wear proper apparel. No loose clothing or jewelry which can get caught in moving parts. Rubber soled footwear is recommended for best footing.
3. Do not overreach. Failure to maintain proper working position can cause you to fall into the machine or cause your clothing to get caught — pulling you into the machine.
4. Keep guards in place and in proper working order. Do not operate the machine with guards removed.
5. Avoid dangerous working environments. Do not use stationary machine tools in wet or damp locations. Keep work areas clean and well lit.
6. Avoid accidental starts by being sure the start switch is "OFF" before plugging in the machine.
7. Never leave the machine running while unattended. Machine shall be shut off whenever it is not in operation.
8. Disconnect electrical power before servicing. Whenever changing accessories or general maintenance is done on the machine, electrical power to the machine must be disconnected before work is done.
9. Maintain all machine tools with care. Follow all maintenance instructions for lubricating and the changing of accessories. No attempt shall be made to modify or have makeshift repairs done to the machine. This not only voids the warranty but also renders the machine unsafe.
10. Machinery must be anchored to the floor.
11. Secure work. Use clamps or a vise to hold work, when practical. It is safer than using your hands and it frees both hands to operate the machine.
12. Never brush away chips while the machine is in operation.
13. Keep work area clean. Cluttered areas invite accidents.
14. Remove adjusting keys and wrenches before turning machine on.
15. Use the right tool. Don't force a tool or attachment to do a job it was not designed for.
16. Use only recommended accessories and follow manufacturers instructions pertaining to them.
17. Keep hands in sight and clear of all moving parts and cutting surfaces.
18. All visitors should be kept at a safe distance from the work area. Make workshop completely safe by using padlocks, master switches, or by removing starter keys.
19. Know the tool you are using — its application, limitations, and potential hazards.

General electrical cautions

This drill press should be grounded in accordance with the National Electrical Code and local codes and ordinances. This work should be done by a qualified electrician. The saw should be grounded to protect the user from electrical shock.

Wire sizes

Caution: for circuits which are far away from the electrical service box, the wire size must be increased in order to deliver ample voltage to the motor. To minimize power losses and to prevent motor overheating and burnout, the use of wire sizes for branch circuits or electrical extension cords according to the following table is recommended.

| Conductor length | AWG (American wire gauge) number | |
|------------------|----------------------------------|----------------|
| | 240 volt lines | 120 volt lines |
| 0-50 feet | No. 14 | No. 14 |
| 50-100 feet | No. 14 | No. 12 |
| Over 100 feet | No. 12 | No.8 |

Safety Instructions for Drill Presses

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2. Drill press head and table shall be securely locked to the column before operating the drill press. This must always be checked prior to starting the machine.

3. Always use the correct tooling. Tooling shall always be maintained and properly sharpened. All tooling must be run at the proper speeds and feeds as they apply to the job. Use only recommended accessories and follow those manufacturers instructions pertaining to them. Tooling shall be not be forced in to any workpiece but fed according to the proper specifications. Failure to follow these instructions will not only ruin the tooling as well as the machine, but can cause serious injury.

4. Never brush away any chips while the machine is in operation. All clean up should be done when the machine is stopped.

5. Keep hands in sight. Do not put hands or fingers around, on, or below any rotating cutting tools. Leather safety gloves should be used when

handling any sharp objects or cutting tools. See Figure A.

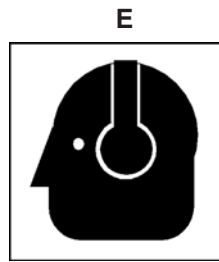
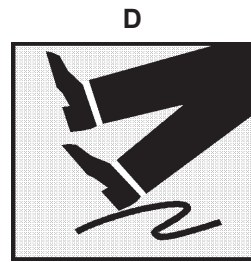
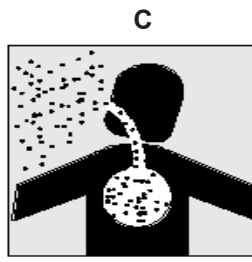
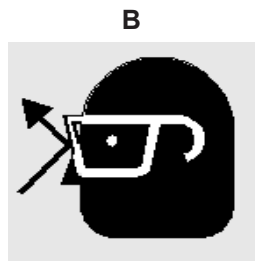
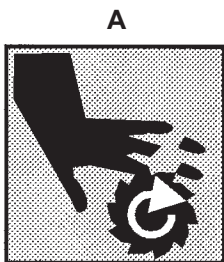
6. Always wear protective eye wear when operating, servicing or adjusting machinery. Eyewear shall be impact resistant, protective safety glasses with side shields complying with ANSI Z87.1 specifications. Use of the eye wear which does not comply with ANSI Z87.1 specifications could result in severe injury from breakage of eye protection. Figure B.

7. When drilling in material which causes dust, a dust mask shall be worn. See Figure C.

8. Avoid contact with coolant, especially guarding the eyes.

9. Non-slip footwear and safety shoes are recommended. See Figure D.

10. Wear ear protectors (plugs or muffs) during extended periods of operation. See Figure E.



Introduction

This manual includes operating and maintenance instructions for the Wilton Model 2221VS, 2223VS, 2232AC and 2234AC Variable Speed Drill Presses. This manual also includes parts listings and illustrations of replaceable parts.

Wilton Model 2221VS and 2223VS drill presses feature manual speed control. Models 2232AC and 2234AC have inverter speed control. This manual contains procedures for both speed control versions. The manual provides separate instructions when differences in operation and maintenance exist.

Refer to Figures 1 and 2 for key features of the drill press.

Operation and Set-up

Securing the Base

The base of the drill press has four mounting slots; two slots on both sides of the base. The drill press should be level and rest solidly on the floor. Place shims under the four mounting slots in the base as needed to level the drill press.

When securing the base to the floor, apply even torque to the fasteners to prevent distortion of the base.

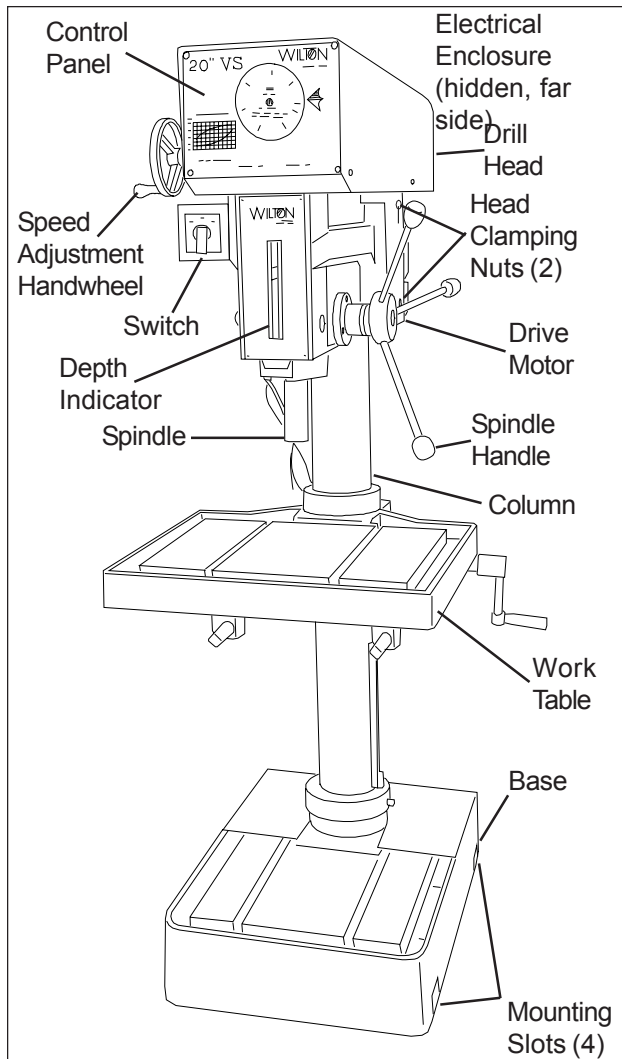


Figure 1: Drill Press Features (Manual Speed Control Model)

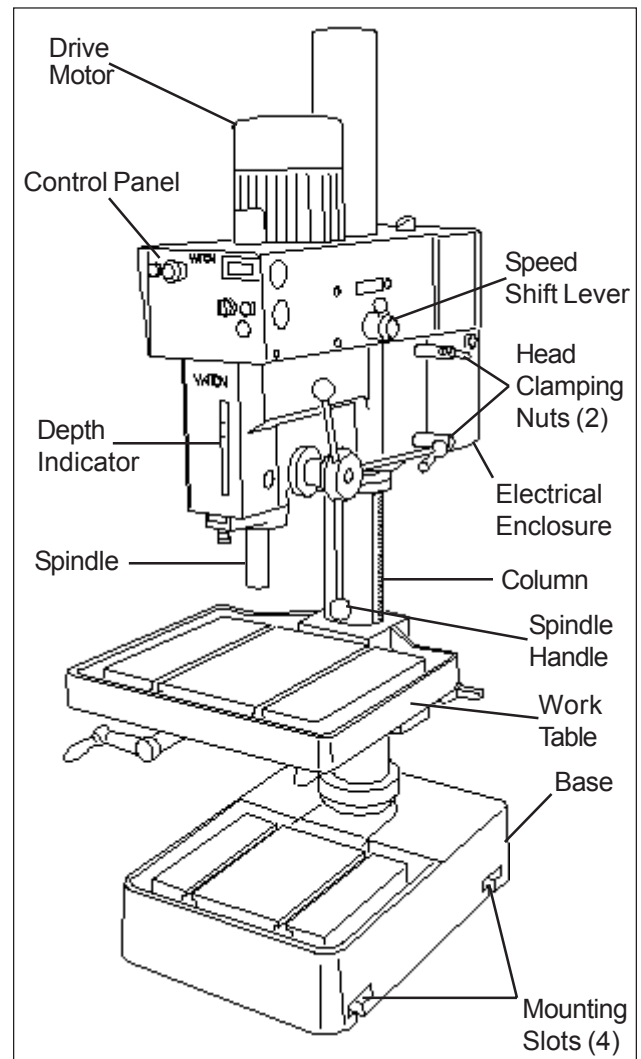


Figure 2: Drill Press Features (Inverter Speed Control Model)

Raising the Drill Head and Table

The drill press is shipped with the table and drill head supported by wooden blocks near the bottom of the column.

The head is raised to the operating position using a strap and hoist, then secured to the column by tightening the hex cap screw. The table is raised to the desired position using the crank handle.

Electrical Connection

Refer to the **Wiring Diagram** section for wiring information.

Models 2221VS (manual control) and 2232AC (inverter control) are pre-wired for 115 volts. Models 2223VS (manual control) and 2234AC (inverter control) are pre-wired for 220 volts.

Connection of electrical power should be made by a qualified electrician. Observe local electrical codes when connecting the machine.

Operating Controls

(Refer to Figures 3, 4, and 5)

Manual Speed Control - Models 2221VS and 2223VS (See Figure 3)

Spindle Selector Switch

A three-position selector switch is provided at the left side of the drill head. It is used to select spindle rotation: reverse (REV), off (OFF), and forward (FWD).

Speed Control Hand Wheel

CAUTION: TO AVOID DAMAGE TO THE SPEED ADJUSTMENT MECHANISM, THE DRIVE MOTOR MUST BE OPERATING BEFORE ATTEMPTING TO ADJUST THE SPEED SETTING.

A speed control hand wheel is provided on the left front of the head (refer to Figure 3 for location). The handle is turned clockwise to increase spindle speed and counterclockwise to reduce speed. To set the speed, the speed control handle is turned until the pointer on the front panel is at the desired speed.

Speed Indicator

An LED spindle speed indicator is provided on the front panel. The LED indicates speeds from 300 to 2000 rpm.

A selector switch is provided at the left side of the drill head. The two-position switch is used to start and stop the drive motor.

Speed Control Handle

CAUTION: TO AVOID DAMAGE TO THE SPEED ADJUSTMENT MECHANISM, THE DRIVE MOTOR MUST BE OPERATING BEFORE ATTEMPTING TO ADJUST THE SPEED SETTING.

A speed control handle is provided on the front of the head. The handle is turned clockwise to increase spindle speed and counterclockwise to reduce speed. To set the speed, the speed control handle is turned until the pointer is at the desired speed.

Inverter Speed Control - Models 2232 and 2234 (Refer to Figure 2)

Front Panel

The front panel is mounted on the front of the drill head. The panel contains all the controls required to operate the drill press. There are additional controls

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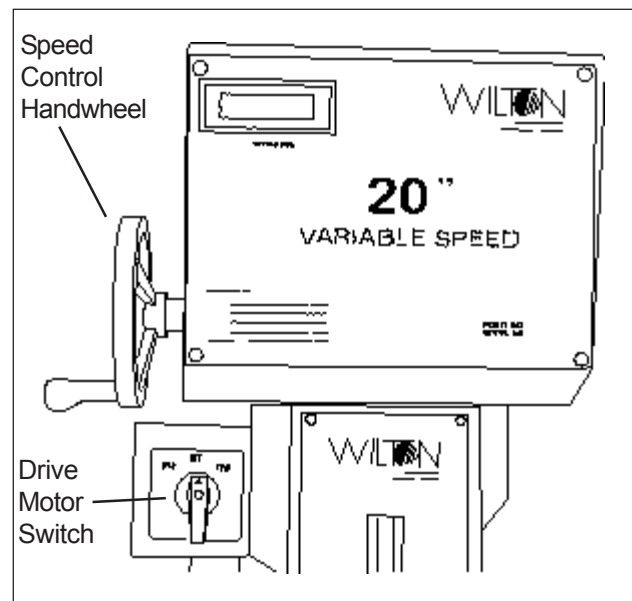


Figure 3: Control Panel (Manual Speed Control)

**Inverter Speed Control -
Models 2232AC and 2234AC (See Figure 4)**

Spindle On Pushbutton Switch

The SPINDLE ON pushbutton (green) is used to start the drive motor. To stop the motor, the pushbutton is pressed (the switch toggles on and off).

Emergency Stop Pushbutton Switch

The mushroom-shaped EMG. STOP pushbutton switch provides a quick means of stopping the drive motor.

Inverter On Indicator

The INVERTER ON light (red) indicates that the inverter is powered up.

RPM Display

The spindle speed display shows the spindle rpm selected by the spindle control knob (below).

Spindle Speed Knob

The SPINDLE SPEED knob is used to set the desired spindle speed. The speed indicator to the right of the SPINDLE SPEED knob displays the spindle speed setting.

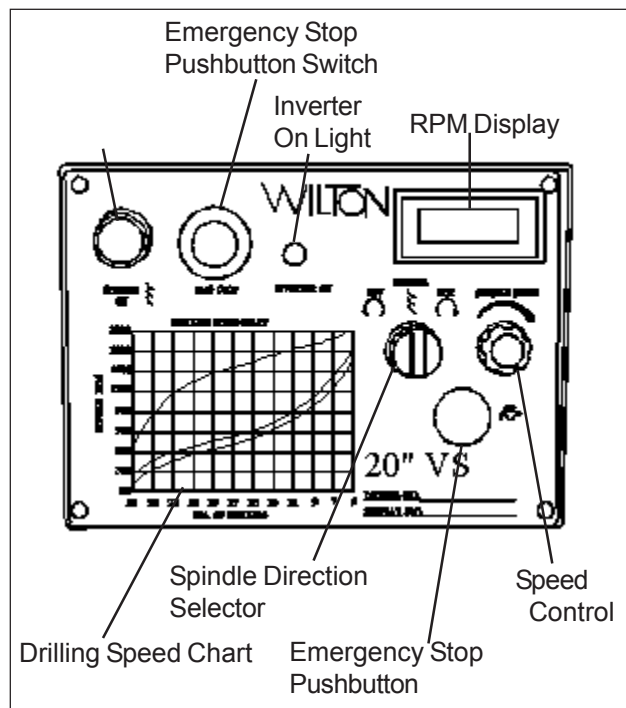


Figure 4: Control Panel (Inverter Speed Control)

Drilling Speed Chart

A DRILLING SPEED CHART is provided on the front panel. The chart can be used to select the speed required for various drill sizes (0.196 inch to 1.000 inch — 5 mm to 25 mm) and materials (steel, cast iron, aluminum, and copper). The chart defines spindle speeds from 300 to 3000 RPM.

**Depth Indicator —
All Models (See Figure 5)**

A drilling depth indicator is provided on the front of the drill head. The indicator can be set for depths up to 6.5 inches (16.5 mm). A knurled knob is provided at the front, underside of the head. Before starting the motor, set the end of the drill against the surface into which the hole is to be drilled. The indicator is zeroed out using the knurled knob. The motor is started and the hole drilled until the indicator pointer reaches the desired depth.

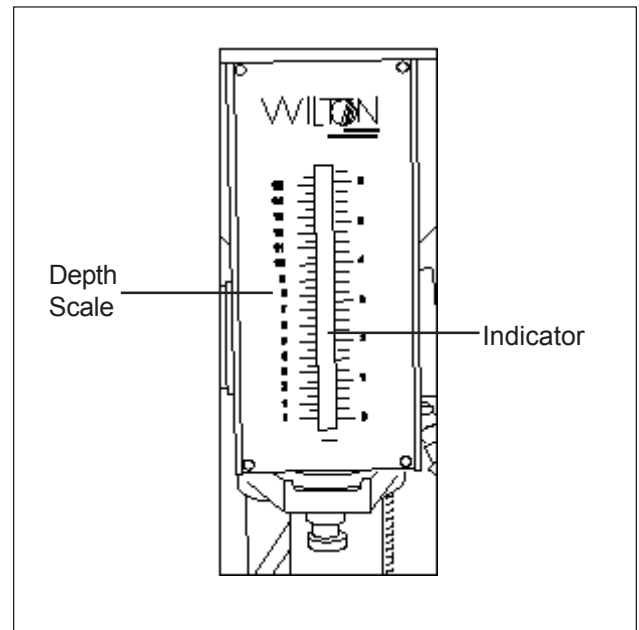


Figure 5: Depth Indicator

Maintenance

Replacement of Drive Belt

WARNING: MAKE SURE TO DISCONNECT ELECTRICAL POWER TO THE DRILL PRESS TO AVOID THE POSSIBILITY OF INADVERTENT OPERATION AND EXPOSURE TO POTENTIALLY LETHAL VOLTAGE LEVELS.

Manual Speed Control - Models 2221VS and 2223VS

1. Start drill press. Set speed control to highest speed. Stop drill press.
2. Disconnect electrical power by setting drill press circuit breaker to OFF.
3. Remove head cover.
4. Remove belt. (With speed control setting at the highest speed, the belt should be loose enough to remove.)
5. Install the replacement belt. Install the head cover.
6. Set the drill press circuit breaker ON.
7. Operate the drill press to verify correct operation.

Inverter Speed Control - Models 2232AC and 2234AC

1. Disconnect electrical power by setting drill press circuit breaker to OFF.
2. Remove pan screws from small cover (around column). Remove pan screws and eight bolts from head cover.
3. Loosen set screw and remove shift lever.
4. Remove plastic spindle cup.
5. Remove head cover. Leave small cover in place.
6. Disconnect electrical wiring from motor junction box. Remove motor from mounting plate.
7. Remove motor mounting plate.
6. Remove three screws from pulley covers (discs). Remove used belt. Install the replacement belt.
8. Install pulley covers and secure with three screws in each pulley cover.
9. Install motor mounting plate. Install motor and connect electrical wiring (refer to **Wiring Diagram** section for wiring details).
10. Install the head cover and secure with pan screws and eight bolts.
11. Secure small head cover to head cover using pan screws.
12. Set the drill press circuit breaker ON.
13. Operate the drill press to verify correct operation.

Replacement of Motor

WARNING: MAKE SURE TO DISCONNECT ELECTRICAL POWER TO THE DRILL PRESS TO AVOID THE POSSIBILITY OF INADVERTENT OPERATION AND EXPOSURE TO POTENTIALLY LETHAL VOLTAGE LEVELS.

Manual Speed Control - Models 2221VS and 2223VS

1. Remove drive belt (refer to **Replacement Of Drive Belt**).
2. Disconnect electrical wiring from motor junction box.
3. Remove nuts from mounting studs securing motor to drill head. Remove motor.
4. Remove upper and lower pulleys and related components from motor shaft.
5. Install upper and lower pulleys and related components on replacement motor shaft.
6. Install motor on mounting studs and secure with nuts.
7. Connect electrical wiring (refer to **Wiring Diagram** section for wiring details).
8. Install drive belt (refer to **Replacement Of Drive Belt**).
9. Operate drill press to verify proper operation.

Inverter Speed Control - Models 2232AC and 2234AC

Refer to **Replacement Of Drive Belt** for instructions for removal of the drive motor.

Lubrication

Following are lubrication recommendations for drill press components.

Manual Speed Control - Models 2221VS and 2223VS

1. Spindle pulley drive: Lubricate spindle splines occasionally with light grease.
2. Quill and column: Lubricate with light film of oil.
3. Lift rack: Lubricate regularly with SAE 20 oil (clean rack with kerosene before applying oil).
4. Variable drive:
 - a. Speed control fork: service oil hole with SAE 20 oil once a week.
 - b. Countershaft spindle and push rod: lubricate with SAE 20 oil occasionally.
 - c. Speed control handle cam: clean and grease with medium cup grease annually.

Inverter Speed Control - Models 2232AC and 2234AC

1. Spindle pulley drive: Lubricate spindle splines occasionally with light grease.
2. Quill and column: Lubricate with light film of oil.
3. Lift rack: Lubricate regularly with SAE 20 oil (clean rack with kerosene before applying oil).
4. Variable speed drive:
 - a. Periodically check oil level in sight gauge on (left side of head) (refer to Figure 6).
 - b. If level is below centerline of sight gauge, add oil.
 - c. To add oil, remove oil fill tube cover plate. Pull fill tube out of hole in head cover.
 - d. Add SAE 20 oil to bring oil level up to the centerline of the sight gauge.
 - e. Put end of fill tube back through hole in head cover. Install fill tube cover and secure with two screws.

Machine Adjustments

Table Adjustment (See Figure 7)

The table can be raised or lowered to accommodate the height of the workpiece. To raise or lower the table, loosen the table lock using the hand crank. Then use the hand crank to move the table to the desired height. Then lock the table in position.

Head Adjustment

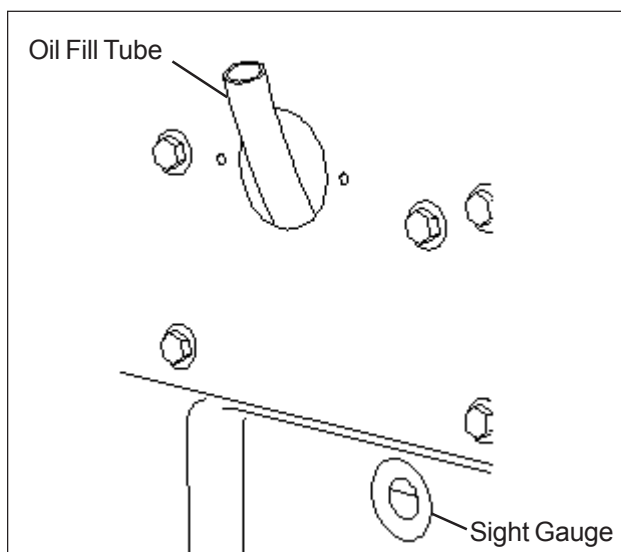


Figure 6: Oil Level Sight Gauge and Fill Tube

WARNING: CHANGE THE RADIAL POSITION OF THE DRILL HEAD ONLY IF THE DRILL PRESS BASE IS SECURED TO THE FLOOR. SWINGING THE DRILL HEAD WITHOUT THE BASE BEING SECURED TO THE FLOOR WILL CAUSE THE DRILL PRESS TO BECOME UNSTABLE AND TIP OVER RESULTING IN INJURY AND/OR DAMAGE TO THE MACHINE.

Radial Adjustment of Head (All Models)

The radial position of the drill head can be changed to accommodate the drilling of a hole that may be offset from the center of the table. Reposition the drill head as follows:

1. Loosen the two clamping hex nuts using the hex socket wrench provided with the machine.
2. The swing the drill head to the desired position.
3. Tighten the two clamping nuts.

Adjustment of Speed Pickup

(Manual Models 2221AC and 2223AC)

1. Loosen screws securing speed pickup (ref. 56-1) to bracket (ref. 56-2).
2. Adjust the speed pickup gap to approximately 1/8-inch.
3. Operate drill press to verify that speed readout is operating correctly.

(Inverter Models 2232AC and 2234AC)

1. Loosen screws securing speed pickup (ref. 68A) to bracket (ref. 70A) on drill head.
2. Adjust the speed pickup gap to approximately 1/8-inch.
3. Operate drill press to verify that speed readout is operating correctly.

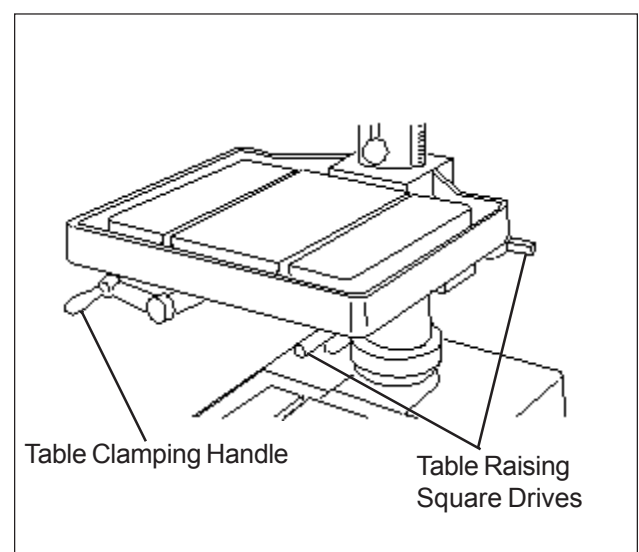


Figure 7: Table Adjustment

Operating Precautions

The following operating and safety precautions must be observed in order to avoid harm to the operator or damage to the drill press.

1. The head assembly must be locked to the column so the thrust produced by drilling will not force the head assembly up the column.
2. The work table must be locked to the column so it will not be forced down the column.
3. Before drilling, release the quill lock nut to permit free travel of the quill.
4. Be sure the belt is tightened to the proper tension.
5. **DO NOT** start to drill the workpiece until making certain the workpiece is held down securely.
6. **MAKE SURE THE DRIVE MOTOR IS RUNNING BEFORE** turning the speed control handwheel in either direction.
7. Point of operation protection is required for maximum safety. This remains the responsibility of the user/purchaser since conditions differ between jobs.
8. Make sure the drill is secured in the spindle or check before attempting to use the drill press.
9. Make sure the spindle taper is clean and free of burrs, scoring, and galling to assure maximum gripping.
10. Lock the quill in position when using and side-loaded tool.

Drilling Recommendations

Speeds for Drilling

The speed of a drill is usually measured in terms of the rate at which the outer periphery of the tool moves in relation to the work being drilled. The common term for this is Surface Feet per Minute (SFM). The relationship of SFM is expressed in the following formulas:

$$\text{SFM} = 0.26 \times \text{rpm} \times \text{Drill Diameter (in inches)}$$

$$\text{RPM} = 3.8 \times \frac{\text{SFM}}{\text{Drill diameter (in inches)}}$$

In general, the higher the speed the shorter the drill life. Operating at the low end of the speed range for a particular material will result in longer life. The most efficient speed for operating a drill depends on many variables:

1. Composition and hardness of material.
2. Depth of the hole.
3. Efficiency of the cutting fluid.
4. Type and condition of the drilling machine.
5. Desired quality of the hole.
6. Difficulty of set-up.

Feeds for Drilling

The feed of a drill is governed by the size of the tool and the material drilled. Because the feed rate partially determines the rate of production and also is a factor in tool life, it should be chosen carefully for each job. In general, the most effective feeds will be found in the following ranges:

| Diameter of Drill (inches) | Feed per Revolution (inches) |
|-------------------------------|---------------------------------|
| Under 1/8 | 0.001 to 0.002 |
| 1/8 to 1/4 | 0.002 to 0.004 |
| 1/4 to 1/2 | 0.004 to 0.007 |
| 1/2 to 5/8 | 0.007 to 0.015 |

Indication of Extreme Speeds and Feeds

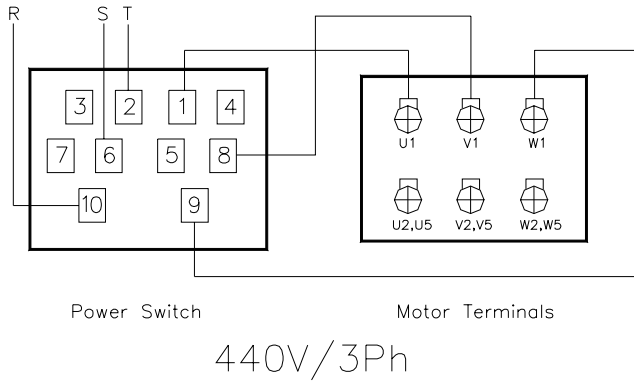
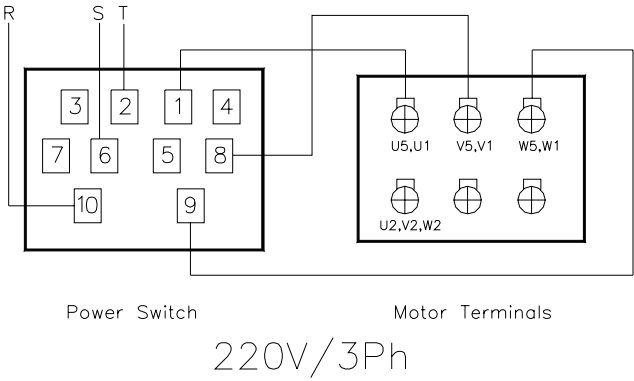
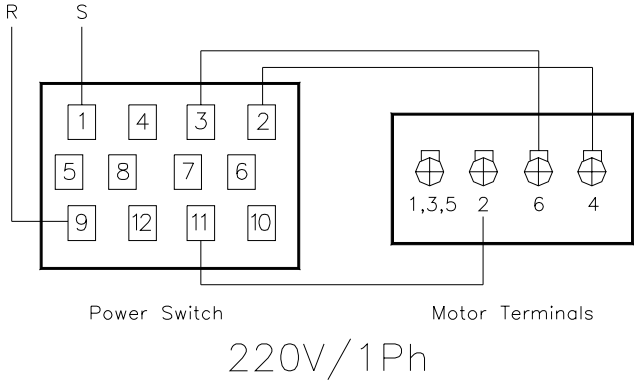
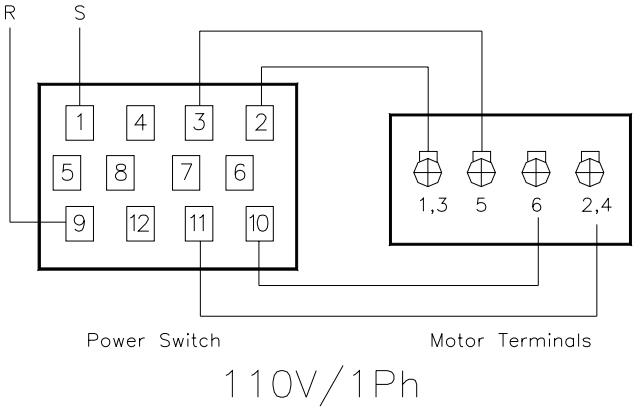
A drill that splits up the web is evidence of too much feed or insufficient tip clearance at the center as a result of improper grinding. The rapid wearing away of the extreme outer corners of the cutting edges indicates that the speed is too high. A drill chipping or braking out at the cutting edges indicates that either the feed is too heavy or the drill has been ground with too much tip clearance.

Speeds for High Speed Steel Drills

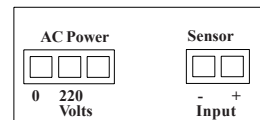
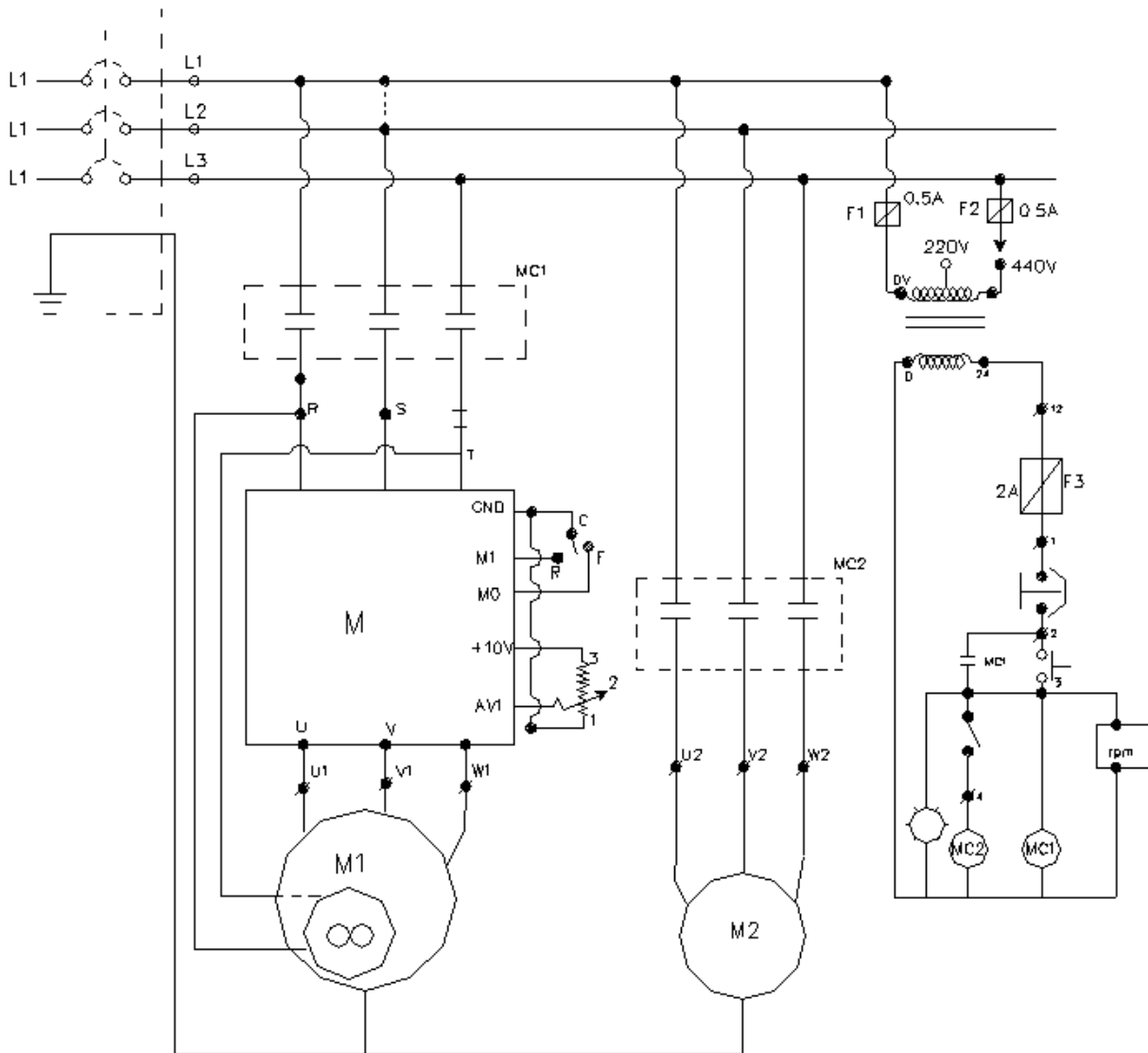
| Material | Speed In SFPM |
|--|------------------|
| Alloy Steel — 300 to 400 Brinell | 20 - 30 |
| Stainless Steel | 30 - 40 |
| Automotive Steel Forgings | 40 - 50 |
| Tool Steel, 1.2C | 50 - 60 |
| Steel, .4C to .5C | 70 - 80 |
| Mild Machinery Steel, .2C to .3C | 80 - 110 |
| Hard Chilled Cast Iron | 30 - 40 |
| Medium Hard Cast Iron | 70 - 100 |
| Soft Cast Iron | 100 - 150 |
| Malleable Iron | 80 - 90 |
| High Nickel Steel or Monel | 40 - 50 |
| High Tensile Bronze | 70 - 150 |
| Ordinary Brass and Bronze | 200 - 300 |
| Aluminum and its Alloys | 200 - 300 |
| Magnesium and its Alloys | 250 - 400 |
| Slate, Marble, and Stone | 15 - 25 |
| Plastics and similar material (Bakelite) | 100 - 150 |
| Wood | 300 - 400 |
| Titanium Alloys | 10 - 25 |
| Titanium Alloy Sheet | 50 - 60 |

In cases where carbon steel drills are applicable, the drill should be run at speeds of from 40 to 50 percent of those given above.

Wiring Diagram - Models 2221 & 2223



Wiring Diagram - Models 2232AC & 2234AC



**3 Phase 220/440
LED Display Connection**

Troubleshooting

| Problem | Possible Cause | Remedy |
|--------------------------|--|---|
| Spindle does not turn. | <ol style="list-style-type: none"> 1. Motor overload protector tripped. 2. Circuit breaker tripped. 3. Branch circuit breaker tripped or fuse blown. 4. Open wire in switch circuit. 5. Defective switch. 6. Broken drive belt. | <ol style="list-style-type: none"> 1. Press motor overload reset button. 2. Reset circuit breaker. 3. Reset branch circuit breaker/replace fuse. 4. Repair open circuit. 5. Replace switch. 6. Replace drive belt. |
| Spindle noisy. | <ol style="list-style-type: none"> 1. Damaged spindle bearings. 2. Worn spline. | <ol style="list-style-type: none"> 1. Replace bearings. 2. Replace spline. |
| Drill stalls. | <ol style="list-style-type: none"> 1. Worn drive belt. 2. Excessive feed rate for size of drill and material being drilled. No cutting fluid or improper cutting fluid. | <ol style="list-style-type: none"> 1. Check condition of belt. Replace if glazed or slipping on pulleys. 2. Reduce feed pressure or use cutting fluid. Use correct cutting fluid. |
| Poorly drilled holes. | <ol style="list-style-type: none"> 1. Drill dull. 2. Lack of rigidity in hold-down method. 3. Speed too fast for material and drill size. 4. Feed too fast for material and drill size. 5. No or improper cutting fluid or coolant being used. 6. Improperly ground drill bit. | <ol style="list-style-type: none"> 1. Sharpen drill. 2. Check that all T-slot hold-downs are tight and that table-lock and drill head bolts are tight. 3. Check spindle speed recommendations. Reduce speed if necessary. 4. Reduce feed rate. 5. Use cutting fluid, or change to proper fluid or coolant for material being drilled. 6. Check for proper angles and reliefs. Regrind to proper geometry. |
| Motor overheating | <ol style="list-style-type: none"> 1. Electrical circuit fault. 2. Oversize drill. 3. Excessive feed. 4. No cutting fluid, or wrong fluid. | <ol style="list-style-type: none"> 1. Check current draw in circuit. Make sure current draw is the same as rating on motor plate. 2. Reduce drill size. 3. Reduce feed rate. 4. Use correct cutting fluid for the material and drill. |
| Table can not be raised. | <ol style="list-style-type: none"> 1. Lack of lubrication. | <ol style="list-style-type: none"> 1. Lubricate. |
| No speed readout. | <ol style="list-style-type: none"> 1. Speed pickup out of adjustment or failed. | <ol style="list-style-type: none"> 1. Adjust gap between speed pickup and post spindle pulley. If there is no readout on the LED speed indicator after adjusting the gap, replace the speed pickup. |

Optional Equipment Coolant System Installation

1. Remove the large reservoir cover plate from the machine base. Tap 1/4-20 threads in the 4 pilot holes. Install the cover plate back onto the machine base.
2. Insert the pump into the opening, utilize the screws from the small round cover plate to fasten the pump to the base.
3. Position the power switch and valve bracket on the spindle casting. Mark mounting hole locations and drill holes. (Refer to **Figure 8**).

Note: Mount components near the lower edge of the spindle casting. Do not mount components above the line shown in Figure 9.

4. Install the power switch and valve bracket with the provided fastener hardware.

5. Install the 3/8-inch hose barb to the coolant pump. If needed apply a light coat of pipe sealant or Teflon tape to the threads to prevent leakage.
6. Mount the flow valve to the bracket, connect the supply hose to the pump and valve, use hose clamps at the ends.
7. Install the flexible nozzle to the flow valve.
8. Install the 1/2-inch hose barb to the worktable, seal threads if needed. Connect the return hose.
9. Connect the power cord to a suitable source and ground (refer to **General Electrical Cautions**).
10. Fill the reservoir with appropriate machining coolant.



Figure: 8 Suggested installation

Do not mount components
above this line.

16

Power switch - mounting
plate flush with bottom
edge of spindle casting.



Flow valve
mounting bracket.

Figure 9: Installation Detail

Replacement Parts

This section provides exploded view illustrations that show the replacement parts for Wilton Model 2221VS, 2223VS, 2232AC, and 2234AC 20-Inch Drill Presses. Also provided are parts listings that provide part number, description, and quantity. The item numbers shown on the illustration relate to the item number in the facing page of the parts listing.

Separate exploded views and parts listings are provided for the drill heads for manual speed control drill presses (Models 2221VS and 2223VS) and the inverter speed control drill presses (Models 2232AC and 2234AC). The exploded view and parts listing for the drill press spindle components, and the table, base, and column apply to all models.

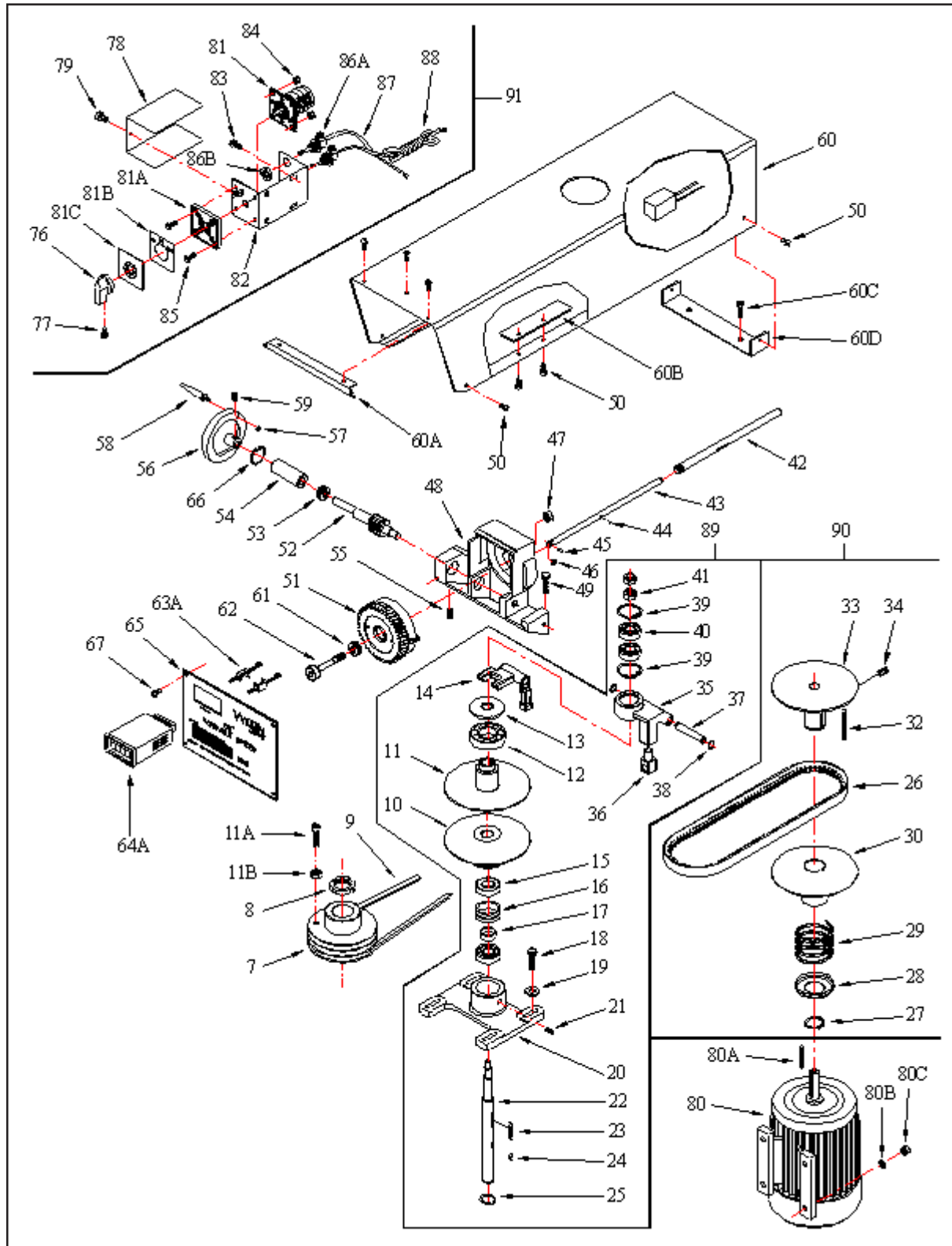
Order replacement parts from:

WMH TOOL GROUP

2420 Vantage Drive
Elgin, IL 60124
Phone: 800-274-6848

Identify the replacement part by the part number shown in the parts listing. Be sure to include the model number and serial number of your machine when ordering replacement parts to assure that you will receive the correct part.

Exploded View — Drill Head — Manual Speed Control (Models 2221VS and 2223VS)

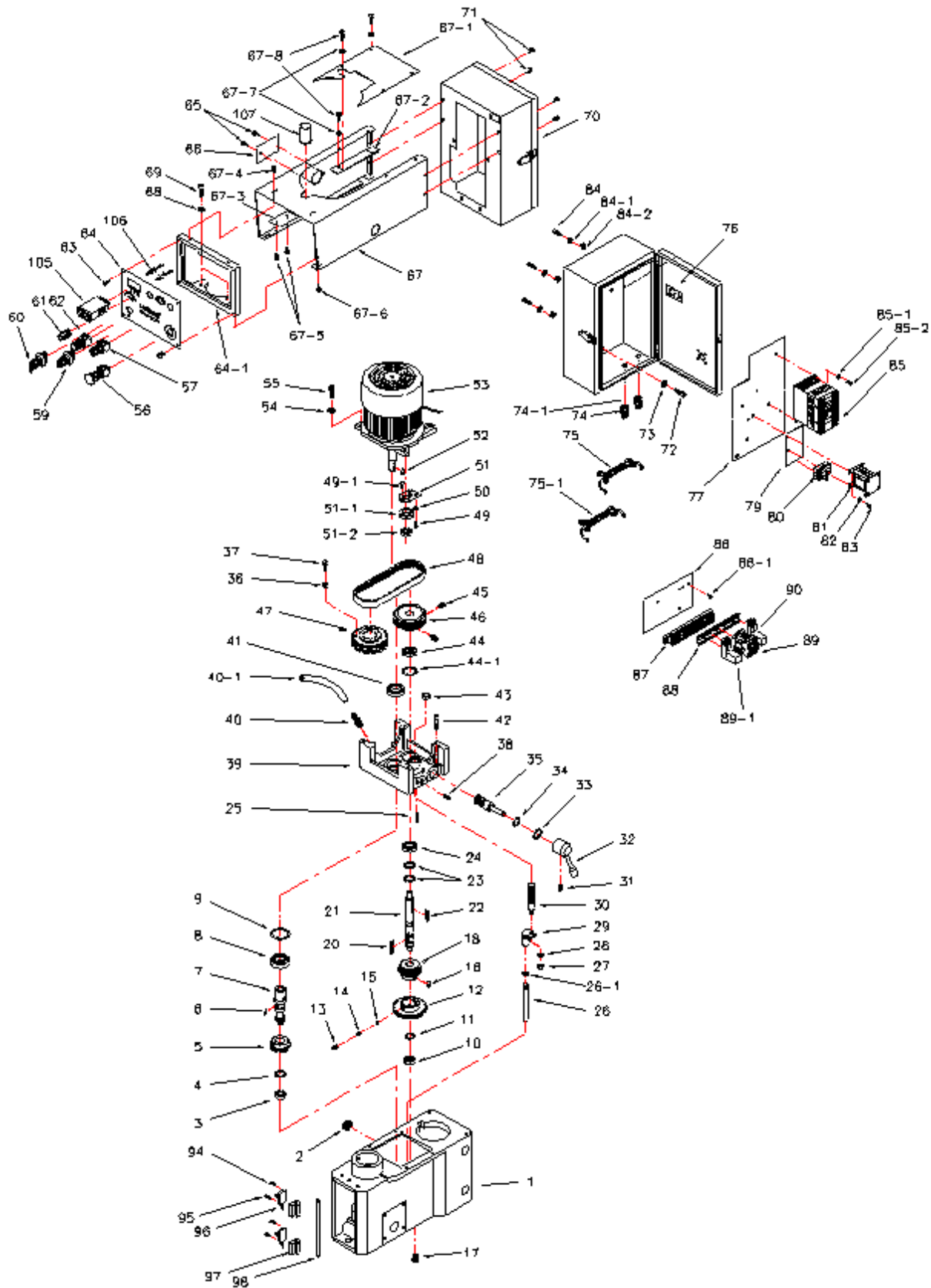


Parts Listing — Drill Head — Manual Speed Control

(Models 2221VS and 2223VS)

| Item No. | Part Number | Description | Qty | Item No. | Part Number | Description | Qty |
|----------|-------------|----------------------------|-----|----------|-------------|--|-----|
| 7 | 5510077 | Pulley, Spindle Step | 1 | 58 | 5510126 | Grip, Hand | 1 |
| 8 | 5510078 | Nut, Spindle | 1 | 59 | 5510129 | Screw, Set | 1 |
| 9 | 5510079 | V-Belt | 1 | 60 | 5513678 | Assy., Pulley Cover (incl 60A,60B,60C,60D) | 1 |
| 10 | 5510080 | Pulley, Spindle, VS, Lower | 1 | 60A | 5513679 | Bracket, Nameplate | 1 |
| 11 | 5510081 | Pulley, Spindle, VS, Upper | 1 | 60B | 5513680 | Plate, Cover | 1 |
| 11A | 5513673 | Screw, Cap | 1 | 60C | 5513681 | Screw, Cap | 2 |
| 11B | 5513674 | Nut, Hex | 4 | 60D | 5513682 | Bracket, Plate | 1 |
| 12 | 5510082 | Bearing, Ball | 1 | 61 | 5510131 | Bearing, Thrust | 1 |
| 13 | 5510083 | Cover, Bearing | 1 | 62 | 5510132 | Shaft | 1 |
| 14 | 5510084 | Lever, Speed Change | 1 | 63A | 5513683 | Screw, Cap | 2 |
| 15 | 5510085 | Bearing, Ball | 2 | 64A | | LED Display | |
| 16 | 5510086 | Bushing | 1 | | 5513519 | 115/230 LED Display | |
| 17 | 5510087 | Bushing | 1 | | 5513736 | 220/440 LED Display | |
| 18 | 5510088 | Bolt, Hex | 4 | 65 | 5513690 | Plate, Face | 1 |
| 19 | 5510089 | Washer | 4 | 66 | 5513685 | C-Ring (Hole) | 1 |
| 20 | 5510090 | Housing, Bearing | 1 | 67 | 5510137 | Screw, Round Head | 4 |
| 21 | 5510091 | Screw, Set | 1 | 76 | 5511848 | Knob | 1 |
| 22 | 5510092 | Shaft, Spindle Mid | 1 | 77 | 5514634 | Set Screw (M3x8) | 1 |
| 23 | 5510093 | Key | 1 | 78 | 5511849 | Cover | 1 |
| 24 | 5510094 | Key | 1 | 79 | 5513354 | Screw | 2 |
| 25 | 5510095 | C-Ring (Shaft) | 1 | 80 | 5510344 | Motor 2hp 1ph 115/220V | 1 |
| 26 | 5510096 | Belt, Variable Speed | 1 | | 5510345 | Motor 2hp 3ph 220/440V | 1 |
| 27 | 5510097 | C-Ring (Shaft) | 2 | 80A | 5517320 | Key, Square | 1 |
| 28 | 5510098 | Cover, Spring | 1 | 80B | 5517321 | Washer, Flat | 4 |
| 29 | 5510099 | Spring | 1 | 80C | 5517322 | Nut, Hex | 4 |
| 30 | 5510100 | Pulley, Motor, VS, Lower | 1 | 81 | | Switch, Fwd/Rev | 1 |
| 32 | 5510102 | Key | 1 | | 5517323 | 1 Phase | |
| 33 | 5510103 | Pulley, Motor, VS, Upper | 1 | | 5517331 | 3 Phase | |
| 34 | 5510104 | Screw, Set | 1 | 81A | 5517324 | Plate, Switch | 1 |
| 35 | 5510105 | Bracket, Speed Change | 1 | 81B | 5517325 | Label | 1 |
| 36 | 5510106 | Link | 1 | 81C | 5517326 | Cover, Label | 1 |
| 37 | 5510107 | Shaft | 1 | 82 | 5513356 | Box, Switch | 1 |
| 38 | 5510108 | C-Ring (Shaft) | 1 | 83 | 5513357 | Screw | 2 |
| 39 | 5510109 | C-Ring (Hole) | 1 | 84 | 5513358 | Nut, Hex | 4 |
| 40 | 5510110 | Bearing, Ball | 2 | 85 | 5513359 | Screw | 4 |
| 41 | 5510111 | Nut | 2 | 86A | 5517327 | Strain Relief | 2 |
| 42 | 5512114 | Sleeve, Control Rod | 1 | 86B | 5517328 | Nut, Hex | 2 |
| 43 | 5512115 | Rod, Control | 1 | 87 | 5517329 | Cord, Connection | 1 |
| 44 | 5510114 | Pin Spring | 1 | 88 | 5517330 | Cord, Power | 1 |
| 45 | 5510115 | Pin | 1 | 89 | 5513935 | Assy., VS Spindle Pulley | 1 |
| 46 | 5510116 | Roller | 1 | 90 | 5513934 | Assy., VS Motor Pulley | 1 |
| 47 | 5510117 | Nut, Hex | 1 | 91 | | Assy., Switch (includes items 76-79,81-85) | 1 |
| 48 | 5512116 | Housing | 1 | | 5513355 | 1 Phase | |
| 49 | 5513675 | Screw, Cap (M8x35) | 2 | | 5514716 | 3 Phase | |
| 50 | 5513676 | Screw, Pan Head | 6 | | | | |
| 51 | 5510121 | Gear, Helix | 1 | | | | |
| 52 | 5510122 | Gear, Worm | 1 | | | | |
| 53 | 5510123 | Bearing, Thrust | 1 | | | | |
| 54 | 5510124 | Bushing | 1 | | | | |
| 55 | 5513677 | Set Screw | 1 | | | | |
| 56 | 5510126 | Wheel, Hand (includes #58) | 1 | | | | |
| 57 | 5510127 | Ring, Retaining | 1 | | | | |

Exploded View — Drill Head — Inverter Speed Control (Models 2232AC and 2234AC)



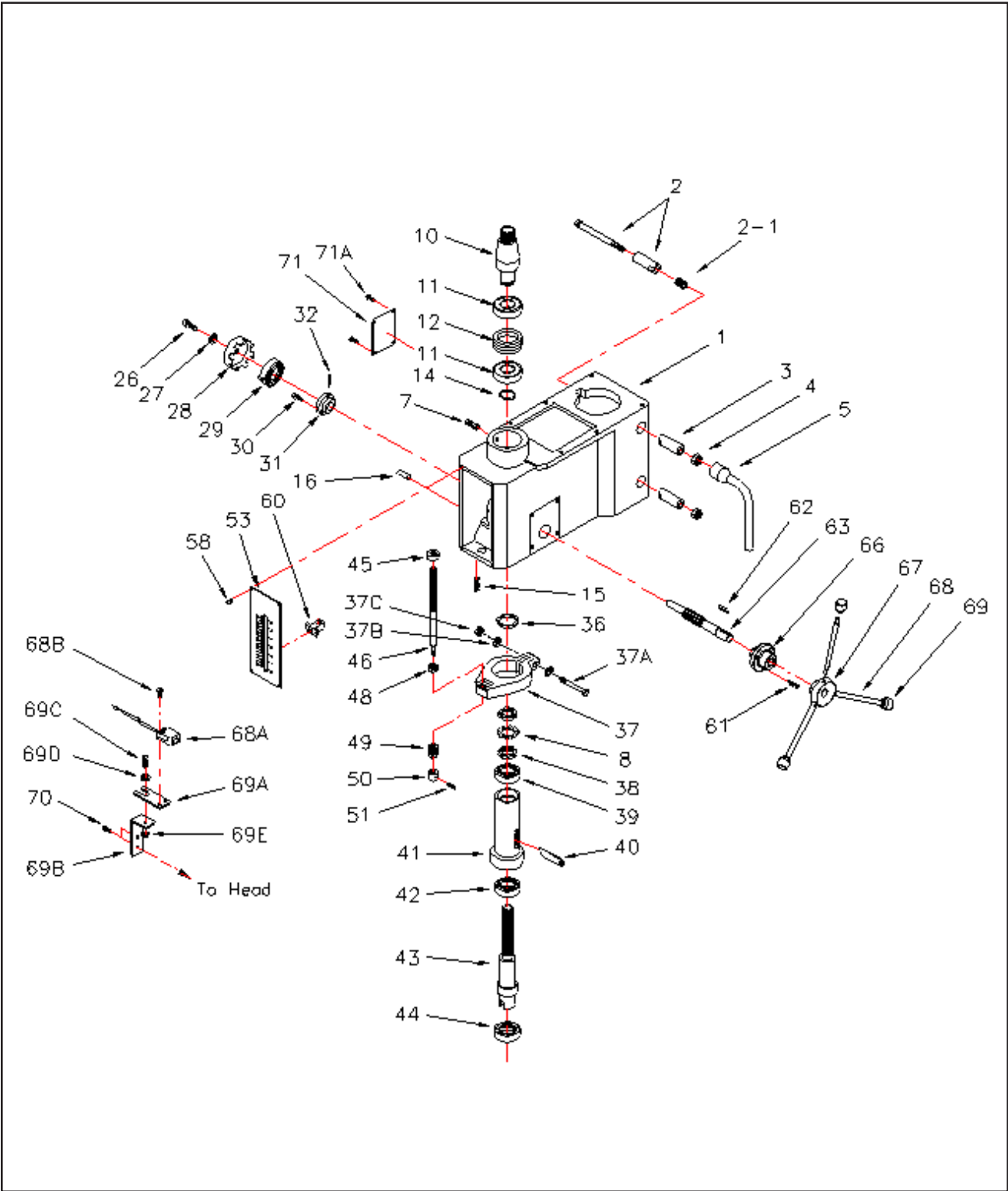
Parts Listing — Drill Head — Inverter Speed Control (Models 2232AC and 2234AC)

| Item No. | Part Number | Description | Qty | Item No. | Part Number | Description | Qty |
|----------|-------------|-------------------------|-----|----------|-------------|------------------------------|-----|
| 1 | 5517332 | Casting, Head | 1 | 51-1 | 5517347 | Housing, Bearing | 1 |
| 2 | 5510142 | Window, Oil | 1 | 51-2 | 5517348 | Bearing, Ball, 6002ZZ | 1 |
| 3 | 5510143 | Bearing, Ball | 1 | 52 | 5510192 | Key | 1 |
| 4 | 5510144 | Ring, Retaining | 1 | 53 | | Motor, 2hp, 3ph | 1 |
| 5 | 5510145 | Gear (32T) | 1 | | 5517349 | 220V | |
| 6 | 5510146 | Key | 1 | | 5517350 | 440V | |
| 7 | 5510147 | Shaft, Drive (13T) | 1 | 54 | 5510194 | Washer | 4 |
| 8 | 5510148 | Bearing, Ball | 1 | 55 | 5510195 | Screw | 4 |
| 9 | 5510149 | Ring, Retaining | 1 | 56 | 5510204 | Switch, E-stop | 1 |
| 10 | 5510150 | Bearing, Ball | 1 | 56-1 | 5510197 | Proximity Switch, Speed | 1 |
| 11 | 5510151 | Ring, Retaining | 1 | 56-2 | 5510198 | Bracket, Proximity Switch | 1 |
| 12 | 5510153 | Gear (55T) | 1 | 57 | 5510201 | Light, Indicator | 1 |
| 13 | 5510152 | Screw, Set | 1 | 59 | 5510199 | Switch, Pump Selector | 1 |
| 14 | 5510155 | Spring | 1 | 60 | 5510200 | Switch, Forward/Reverse | 1 |
| 15 | 5510154 | Ball, Steel | 1 | 61 | 5510196 | Potentiometer, Speed Control | 1 |
| 16 | 5510159 | Key | 1 | 62 | 5510202 | Switch, Pushbutton, Green | 1 |
| 17 | 5517333 | Plug, Drain, 3/8 NPT | 1 | 63 | 5510206 | Screw | 4 |
| 18 | 5510158 | Gear (18T) | 1 | 64 | 5517351 | Panel, Control | 1 |
| 20 | 5510160 | Key | 1 | 64-1 | 5517352 | Bracket, Plate | 1 |
| 21 | 5510161 | Shaft, Mid | 1 | 65 | 5510209 | Screw, Pan Head | 2 |
| 22 | 5510162 | Key | 1 | 66 | 5510210 | Cover, Oil Filler | 1 |
| 23 | 5510163 | Ring, Retaining | 2 | 67 | 5517353 | Cover, Pulley | 1 |
| 24 | 5510164 | Bearing, Ball | 1 | 67-1 | 5517354 | Plate, Top | 1 |
| 25 | 5510165 | Pin 1 | 1 | 67-2 | 5510213 | Plate, Fixed | 1 |
| 26 | 5510166 | Bar | 1 | 67-3 | 5517355 | Plate, Fixed | 1 |
| 26-1 | 5517334 | Ring | 1 | 67-4 | 5510215 | Screw, Pan Head | 2 |
| 27 | 5510167 | Nut, Hex | 1 | 67-5 | 5517356 | Screw | 2 |
| 28 | 5510168 | Washer, Spring | 1 | 67-6 | 5517357 | Screw | 2 |
| 29 | 5510169 | Block, Speed Change | 1 | 67-7 | 5517358 | Washer | 6 |
| 30 | 5510170 | Bar, Gear | 1 | 67-8 | 5510214 | Screw, Pan Head | 4 |
| 31 | 5510171 | Screw, Set | 1 | 68 | 5510216 | Washer, Spring | 2 |
| 32 | 5517335 | Lever, Speed | 1 | 69 | 5510217 | Screw | 2 |
| 33 | 5517336 | Ring, Retaining | 1 | 70 | 5517359 | Enclosure (w/door & latch) | 1 |
| 34 | 5510173 | Seal, Oil | 1 | 71 | 5510219 | Screw | 4 |
| 35 | 5510177 | Shaft, Gear (18T) | 1 | 72 | 5510220 | Bolt | 4 |
| 36 | 5517337 | Nut, Hex | 1 | 73 | 5517360 | Washer | 4 |
| 37 | 5517338 | Screw, Cap | 1 | 74 | 5510222 | Relief, Cable | 1 |
| 38 | 5510178 | Screw, Set | 1 | 74-1 | 5517361 | Relief, Cable | 1 |
| 39 | 5517339 | Cover (Top), Gearbox | 1 | 75 | 5510223 | Cable, Electric | 1 |
| 40 | 5510180 | Fitting, Fill, Oil | 1 | 75-1 | 5517362 | Cable, Electric | 1 |
| 40-1 | 5517340 | Tube, Fill | 1 | 76 | 5510224 | Cover, Window | 1 |
| 41 | 5510181 | Seal, Oil | 1 | 77 | 5517363 | Panel, Component Mounting | 1 |
| 42 | 5510182 | Bolt | 1 | 79 | 5510227 | Board, Insulation | 1 |
| 43 | 5510183 | Seal, Oil | 1 | 80 | 5510228 | Fuse Block | 1 |
| 44 | 5510184 | Seal, Oil | 1 | 81 | 5510229 | Transformer | 1 |
| 44-1 | 5517341 | Ring, Retaining | 1 | 82 | 5517364 | Washer | 4 |
| 45 | 5510185 | Screw, Set | 1 | 83 | 5517365 | Screw, Pan Head | 4 |
| 46 | 5510186 | Pulley, Drive | 1 | 84 | 5517366 | Screw, Cap | 4 |
| 47 | 5517342 | Pulley, Spindle, 48T | 1 | 84-1 | 5517367 | Washer, Lock | 4 |
| 48 | 5517343 | Belt, 720x8 | 1 | 84-2 | 5517368 | Nut, Hex | 4 |
| 49 | 5510189 | Bolt, Hex, M6x30 | 2 | 85 | | Inverter, Delta, M-type | 1 |
| 49-1 | 5517344 | Screw, Flat Head, M5x10 | 2 | | 5510233 | 220V, 3ph | |
| 50 | 5517345 | Washer, Flat, M6 | 2 | | 5512670 | 440V, 3ph | |
| 51 | 5517346 | Bracket | 1 | | | | |

Parts Listing — Drill Head — Inverter Speed Control (Models 2232AC and 2234AC)

| Item No. | Part Number | Description | Qty |
|----------|-------------|-------------------------------|-----|
| 85-1 | 5517371 | Washer, Flat | 4 |
| 85-2 | 5517372 | Screw | 4 |
| 86 | 5517373 | Sub-Panel | 1 |
| 86-1 | 5517374 | Screw | 4 |
| 87 | 5510235 | Terminal Block | 1 |
| 88 | 5517375 | Rail, Mounting | 1 |
| 89 | 5510237 | Contactor | 1 |
| 89-1 | 5510238 | Relay | 1 |
| 90 | 5510240 | Relay | 1 |
| 94 | 5510242 | Screw | 2 |
| 95 | 5510243 | Screw | 2 |
| 96 | 5510244 | Microswitch | 2 |
| 97 | 5510245 | Bracket, Microswitch | 2 |
| 98 | 5510246 | Rod, Microswitch Support | 1 |
| 99 | | Electrical Enclosure Complete | 1 |
| | 5514648 | 220V, 3Ph | |
| | 5514649 | 440V 3Ph | |
| 105 | | LED Display | 1 |
| | 5513519 | 115/220 LED Display | |
| | 5513736 | 220/440 LED Display | |
| 106 | 5513683 | Screw, Cap | 2 |
| 107 | 5515285 | Cap, Spindle | 1 |

Exploded View — Spindle Components (All Models)

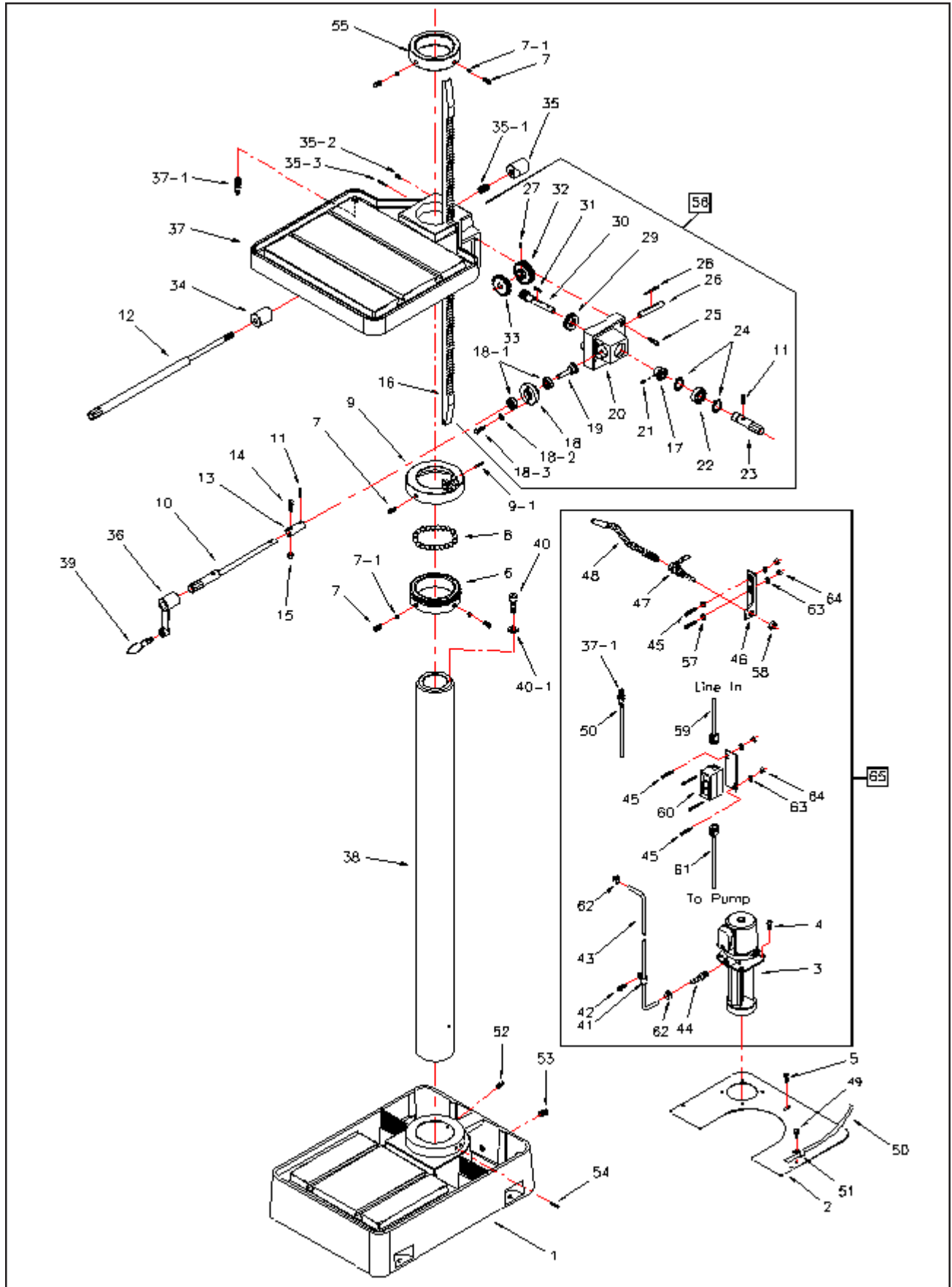


Parts Listing — Spindle Components (All Models)

| Item No. | Part Number | Description | Qty |
|----------|-------------|---------------------------|-----|
| 1 | 5517332 | Casting, Head | 1 |
| 2 | 5517376 | Bolt, Hex, Shoulder | 2 |
| 2-1 | 5517377 | Spring | 2 |
| 3 | 5517378 | Rod, Cam Lock | 2 |
| 4 | 5510250 | Nut, Hex | 2 |
| 5 | 5510251 | Wrench, Hex Head | 1 |
| 7 | 5510252 | Screw, Set | 1 |
| 8 | 5517379 | Washer, External Tooth | 1 |
| 10 | 5510253 | Spindle | 1 |
| 11 | 5510254 | Bearing, Ball | 2 |
| 12 | 5510255 | Spacer | 1 |
| 14 | 5510256 | C-Ring | 1 |
| 15 | 5510258 | Screw, Set | 1 |
| 16 | 5510259 | Pin, Roll | 1 |
| 26 | 5510261 | Screw, Socket Head | 1 |
| 27 | 5510262 | Washer | 1 |
| 28 | 5510263 | Container, (includes #29) | 1 |
| 29 | 5510263 | Spring, Return | 1 |
| 30 | 5510265 | Screw, Socket Head | 3 |
| 31 | 5510266 | Seat, Spring | 1 |
| 32 | 5510267 | Pin, Spring | 1 |
| 36 | 5513770 | Washer, Rubber | 1 |
| 37 | 5513771 | Band, Quill | 1 |
| 37A | 5517380 | Bolt, Hex, Shoulder | 1 |
| 37B | 5517381 | Washer, Flat | 2 |
| 37C | 5517382 | Nut, Hex | 1 |
| 38 | 5513772 | Nut, Lock | 2 |
| 39 | 5513773 | Bearing, Ball | 1 |
| 40 | 5513774 | Pin, Drift | 1 |
| 41 | 5510268 | Quill | 1 |
| 42 | 5510269 | Bearing, Ball | 1 |
| 43 | 5510270 | Spindle | 1 |
| 44 | 5510271 | Seal, Oil | 1 |
| 45 | 5510272 | Nut | 1 |
| 46 | 5510273 | Rod, Depth | 1 |
| 48 | 5510274 | Nut | 1 |
| 49 | 5510275 | Nut | 1 |
| 50 | 5510276 | Retainer | 1 |
| 51 | 5510277 | Pin, Spring | 1 |
| 53 | 5510278 | Scale, Depth | 1 |
| 58 | 5510279 | Screw, Round Head Cap | 4 |
| 60 | 5510280 | Key | 1 |
| 61 | 5510281 | Screw, Socket Head | 3 |
| 62 | 5510282 | Key | 1 |
| 63 | 5510283 | Shaft, Feed | 1 |
| 66 | 5510284 | Seat, Feed Shaft | 1 |

| Item No. | Part Number | Description | Qty |
|----------|-------------|----------------------|-----|
| 67 | 5510285 | Hub | 1 |
| 68 | 5510286 | Spoke | 3 |
| 68A | 5513515 | Pickup, Magnetic | 1 |
| 68B | 5513687 | Screw, Pan Head | 2 |
| 69 | 5510287 | Knob | 3 |
| 69A | 5517383 | Plate, Adjustable | 1 |
| 69B | 5517384 | Bracket, Mag. Pickup | 1 |
| 69C | 5513689 | Screw, Cap | 1 |
| 69D | 5517385 | Washer, Flat | 1 |
| 69E | 5517386 | Nut, Hex | 1 |
| 70 | 5517387 | Screw | 2 |
| 71 | 5511849 | Cover | 1 |
| 72 | 5513354 | Screw | 4 |

Exploded View - Table and Base (All Models)



Parts List - Table and Base (All Models)

| Item No. | Part Number | Description | Qty |
|----------|-------------|----------------------------|-----|
| 1 | 5510288 | Base | 1 |
| 2 | 5510289 | Plate, Coolant Cover | 1 |
| 3 | 5510456 | Pump, Coolant, 115V, 1P | 1 |
| | 5512103 | Pump, Coolant, 220/440V 3P | 1 |
| 4 | 5510291 | Bolt, Hex | 4 |
| 5 | 5517388 | Screw, Pan Head | 3 |
| 6 | 5510293 | Seat, Ball | 1 |
| 7 | 5510294 | Screw, Set | 4 |
| 7-1 | 5517389 | Block, Brass | 4 |
| 8 | 5510295 | Bearing, Ball | 1 |
| 9 | 5510296 | Ring, Lock | 1 |
| 9-1 | 5517390 | Pin | 1 |
| 10 | 5516859 | Shaft, Table Raiser | 1 |
| 11 | 5510298 | Pin, Spring | 4 |
| 12 | 5516858 | Shaft, Table Clamp | 1 |
| 13 | 5516860 | Coupling, Table Raiser | 1 |
| 14 | 5510300 | Screw, Socket Head | 1 |
| 15 | 5510301 | Nut | 1 |
| 16 | 5510302 | Rack | 1 |
| 17 | 5514663 | Gear, Bevel, Large | 1 |
| 18 | 5517391 | Housing, Bearing | 1 |
| 18-1 | 5517392 | Bearing, Ball, 620ZZ | 2 |
| 18-2 | 5517393 | Washer | 2 |
| 18-3 | 5510303 | Screw, Cap | 2 |
| 19 | 5510304 | Gear, Bevel, Small | 2 |
| 20 | 5510305 | Bracket Cover | 1 |
| 21 | 5510306 | C-Ring | 1 |
| 22 | 5510307 | Bearing, Ball | 1 |
| 23 | 5510308 | Shaft | 1 |
| 24 | 5510309 | C-Ring | 2 |
| 25 | 5510310 | Screw, Socket Head | 4 |
| 26 | 5510311 | Shaft | 1 |
| 27 | 5517395 | Screw, Set | 1 |
| 28 | 5510313 | Key | 1 |
| 29 | 5510314 | Bearing | 1 |
| 30 | 5510315 | Worm, Table Raise | 1 |
| 31 | 5510316 | Key | 1 |
| 32 | 5510317 | Gear, Worm | 1 |
| 33 | 5510318 | Gear | 1 |
| 34 | 5510319 | Lock, Cam, Front | 1 |
| 35 | 5510320 | Lock, Cam, Rear | 1 |
| 35-1 | 5517396 | Spring | 1 |
| 35-2 | 5517397 | Screw, Cap, M6x25 | 1 |
| 35-3 | 5517398 | Pin, 5x25 | 2 |
| 36 | 5510321 | Crank, Table Raise | 2 |
| 37 | 5510322 | Table | 1 |
| 37-1 | 5517399 | Barb, Hose, 1/2" (return) | 1 |
| 38 | 5510323 | Column | 1 |
| 39 | 5510324 | Handle, Table Raise | 1 |
| 40 | 5510325 | Screw, Hex Head | 1 |
| 40-1 | 5510334 | Washer | 1 |

| Item No. | Part Number | Description | Qty |
|----------|-------------|---------------------------|-----|
| 41 | 5510326 | Clamp | 1 |
| 42 | 5510327 | Screw, Pan Head | 1 |
| 43 | 5510328 | Hose, Vinyl, Clear, 3/8" | 1 |
| 44 | 5510329 | Barb, Hose, 3/8" (supply) | 1 |
| 45 | 5512112 | SHCS, #10-32 x 1" | 4 |
| 46 | 5510331 | Bracket, Mounting | 1 |
| 47 | 5510332 | Valve | 1 |
| 48 | 5510333 | Nozzle, Flexible | 1 |
| 49 | 5517400 | Screw, Pan Head | 1 |
| 50 | 5517401 | Hose, Vinyl, Clear, 1/2" | 1 |
| 51 | 5517402 | Clamp, Hose | 1 |
| 52 | 5517403 | Screw, Set, 1/2 x 1 | 2 |
| 53 | 5517404 | Plug, Drain, 3/8 NPT | 1 |
| 54 | 5517405 | Pin, Spring, 4x50 | 1 |
| 55 | 5517406 | Collar, Rack | 1 |
| 56 | 5513932 | Assembly, Table Raiser | 1 |
| 57 | 9057451 | Washer, Flat, #10 | 2 |
| 58 | 5517488 | Nut, Hex, 1/2" | 1 |
| 59 | 5517489 | Cord, Power | 1 |
| 60 | 5517490 | Assy., Switch | 1 |
| 61 | | Cord, Pump | 1 |
| | 5517491 | 1 Phase | |
| | 5517492 | 3 Phase | |
| 62 | 5517493 | Clamp, Hose, Rad. Type | 2 |
| 63 | 9058341 | Washer, Lock, #10 | 4 |
| 64 | 5517628 | Nut, Hex, #10-32 | 4 |
| 65 | | Coolant System Complete | 1 |
| | 5512104 | 1/8 HP, 115/220V, 1 Phase | |
| | 5508071 | 1/8 HP, 220/440V, 3 Phase | |



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